

C L A I M S

1. Noncorrosive auxiliaries for soldering aluminium and/or for upgrading aluminium alloys based on alkali metal fluoroaluminates, characterized by a content of coprecipitated metallates.
- 5        2. Noncorrosive auxiliaries according to Claim 1, characterized by a content of added metallates.
- 10      3. Noncorrosive auxiliaries according to Claims 1 and 2, characterized in that compounds of the elements of main groups 2 to 5 of the PTE, in particular compounds of strontium, indium, tin, antimony and/or bismuth, are present as metallates.
- 15      4. Noncorrosive auxiliaries according to Claims 1 and 2, characterized in that compounds of the transition elements having atomic numbers of from 21 to 30, from 39 to 47 and/or from 57 to 79, in particular of zirconium, niobium, cerium, lanthanum and/or yttrium, are present as metallates.
- 20      5. Process for preparing noncorrosive auxiliaries for soldering aluminium and for upgrading aluminium alloys based on alkali metal fluoroaluminates, characterized in that metal compounds from the group of compounds of the elements of main groups 2 to 5 of the PTE and/or compounds of the transition elements having atomic numbers of from 21 to 30, from 39 to 47 and/or from 57 to 79 are brought into contact with at least one of the reactants hydrated alumina, hydrogen fluoride and/or an alkali metal compound.
- 25      6. Process for preparing auxiliaries according to Claim 5, characterized in that the metal compounds are used in the form of their salts, preferably their halides, nitrates, carbonates, sulphates, borates, phosphates, or hexafluorosilicates, or their oxides, either as individual compounds, mixtures or in the form of metal complexes.
7. Process for preparing auxiliaries according to Claims 5 and 6, characterized in that strontium, indium, tin, antimony and/or bismuth compounds in the form of their halides, nitrates, carbonates and/or oxides are used.

8. Process for preparing auxiliaries according to Claims 5 and 6, characterized in that zirconium, niobium, cerium, lanthanum and/or yttrium compounds in the form of their halides, nitrates, carbonates and/or oxides are used.
- 5        9. Process for preparing auxiliaries according to Claim 5, characterized in that lithium, sodium, potassium, rubidium and/or caesium compounds or mixtures thereof are used as alkali metal compounds.
- 10      10. Process for preparing auxiliaries according to Claim 9, characterized in that an alkali metal hydroxide, in particular potassium hydroxide, is used as alkali metal compound.
11. Process for preparing auxiliaries according to Claim 5, characterized in that the metal compounds are used in amounts of up to 30% by weight, preferably from 0.01 to 20% by weight, based on alkali metal fluoroaluminate.
12. Process for preparing auxiliaries according to any of Claims 5 to 11, 15 characterized in that the metal compound is introduced into the reaction mixture of hydrated alumina and hydrogen fluoride.
13. Process for preparing auxiliaries according to any of Claims 5 to 11, characterized in that the metal compound is introduced into the reaction mixture of hydrated alumina, hydrogen fluoride and alkali metal hydroxide.
- 20      14. Process for preparing auxiliaries according to any of Claims 5 to 11, characterized in that the metal compound is firstly reacted with the hydrogen fluoride, after which hydrated alumina and alkali metal hydroxide are added.
- 25      15. Process for preparing auxiliaries according to Claim 5, characterized in that mechanical mixing of the metal compounds with alkali metal fluoroaluminate is carried out.
16. Use of the auxiliaries according to any of Claims 1 to 4 as fluxes for soldering components composed of aluminium and/or aluminium alloys or as additives in aluminium production or as additives for upgrading aluminium alloys.

17. Use of the auxiliaries according to Claim 16 as fluxes for soldering components composed of aluminium and/or aluminium alloys, with these being applied as aqueous or organic suspension, as surface coating composition, as paste or as dry substance.

5        18. Use of the auxiliaries according to Claim 16 as additive for upgrading alloys, with the auxiliaries being used as dry substances.

19. Use of the auxiliaries according to Claim 17 for functionalizing the surfaces of the components to be soldered together.